

## CLAIMS

1. A method of controlling torque output of an engine, comprising:  
calculating a desired air-per-cylinder (APC) based on a torque  
command;  
determining an effective throttle area corresponding to said  
5 desired APC based on a non-dimensionalized model; and  
regulating a throttle based on said effective throttle area.
2. The method of claim 1 wherein said step of determining said  
effective throttle area includes establishing an effective throttle area  
look-up table based on said non-dimensionalized model.
3. The method of claim 1 wherein said effective throttle area is  
based on said desired APC, an engine speed, an ambient temperature  
and an ambient pressure.
4. The method of claim 1 further comprising:  
measuring an actual APC; and  
adjusting said effective throttle area based on said actual APC.
5. The method of claim 4 wherein said step of adjusting said  
effective throttle area further includes calculating an APC error based  
on a difference between said desired APC and said actual APC.

6. The method of claim 5 further comprising:  
determining a throttle area correction based on said APC error;  
and  
summing said effective throttle area and said throttle area  
5 adjustment.
7. A system to control torque output of an engine, comprising:  
a throttle that regulates airflow into said engine; and  
a controller that calculates a desired air-per-cylinder (APC)  
based on a torque command, that determines an effective throttle area  
5 corresponding to said desired APC based on a non-dimensionalized  
model and that regulates said throttle based on said effective throttle  
area.
8. The system of claim 7 wherein said controller determines said  
effective throttle area using an effective throttle area look-up table that  
is based on said non-dimensionalized model.
9. The system of claim 7 further comprising:  
an engine speed sensor that generates an engine speed signal;  
an ambient temperature sensor that generates an ambient  
temperature signal; and  
5 an ambient pressure sensor that generates an ambient pressure  
signal, wherein said effective throttle area is based on said desired  
APC, said engine speed signal, said ambient temperature signal and  
said ambient pressure signal.

10. The system of claim 7 further comprising a manifold air flow (MAF) sensor that measures an actual APC, wherein said controller adjusts said effective throttle area based on said actual APC.
11. The system of claim 10 wherein said controller calculates an APC error based on a difference between said desired APC and said actual APC.
12. The method of claim 11 wherein said controller determines a throttle area correction based on said APC error and sums said effective throttle area and said throttle area adjustment.
13. A method of regulating mass airflow through a throttle to control torque output of an engine, comprising:  
generating a torque command signal;  
calculating a desired air-per-cylinder (APC) based on said  
5 torque command signal;  
determining a desired throttle area based on said desired APC;  
determining a throttle area adjustment based on an actual APC;  
calculating an effective throttle area based on said desired  
throttle area and said throttle area adjustment; and  
10 regulating said throttle to provide said effective throttle area.

14. The method of claim 13 further comprising establishing a desired throttle area look-up table based on a non-dimensionalized model.
15. The method of claim 15 further comprising determining said desired throttle area using said look-up table.
16. The method of claim 13 wherein said desired throttle area is further based on an engine speed, an ambient temperature and an ambient pressure.
17. The method of claim 13 further comprising monitoring an actual APC, wherein said throttle area adjustment is based on said actual APC.
18. The method of claim 17 wherein said throttle area adjustment is based on a difference between said actual APC and said desired APC.
19. The method of claim 13 wherein said step of calculating an effective throttle area includes summing said desired throttle area and said throttle area adjustment.